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# Communicating with the system

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You can exchange information with the system through system terminals and maintenance telephones. This chapter discusses these tools for communicating with the system.

**Note:** Before X11 release 19, only one device at a time can communicate with the system. Accessing a device while another is logged in will log out the device that was already connected. The Multi User Login feature, available with X11 release 19 and later, allows more than one device to interact with the Meridian 1. Refer to *X11 system management applications* (553-3001-301) for details on using this feature.

## System terminal

You can send maintenance commands and receive system messages (status and error messages) by accessing the central processing unit (CPU) through an RS-232 device, such as a video display terminal (VDT) or teletypewriter (TTY).

For most system options, only the code is displayed or printed when the CPU sends system messages. For the interpretation of the code and any required action, refer to the *X11 system messages guide* (553-3001-411). Options 51C, 61C, 81, and 81C provide the code, a plain text explanation, and required actions.

Before X11 release 18, if the same data is printed on more than one port, the throughput of each port is equal to the speed of the slowest device. If, for example, a traffic report is printed on two ports, one configured for 9600 baud and the other for 300 baud, the effective throughput of both ports is 300 baud.

X11 release 18 and later provide enhanced I/O buffering (independent throughout). With this capability, devices with higher baud rates run faster than devices that are limited to slower speeds.

**Message format**

Through the system terminal, you can enter commands that tell the system to perform specific tasks; the system performs the tasks and sends messages back to the system terminal, indicating status or errors. System messages, along with indicators such as maintenance display codes and light emitting diode (LED) indicators, identify faults in the system.

System messages are codes with a mnemonic and number, such as PWR0014. The mnemonic identifies an overlay program or a type of message. The number identifies the specific message. Table 1 gives an example of the format for a system message.

**Table 1**  
**System message format**

| System message:<br>PWR0014 | Interpretation                                                                                     |
|----------------------------|----------------------------------------------------------------------------------------------------|
| PWR                        | This message (generated by the system monitor) indicates power and temperature status or failures. |
| 0014                       | This message means the system monitor failed a self-test.                                          |

With options 51C, 61C, 81, and 81C, system messages generated from the Core Common Equipment Diagnostic (LD 135) and the Core Input/Output Diagnostic (LD 137) include the interpretation and any action required. For example, if a CPU test from LD 135 fails, the message displayed is “CCED200 CPU test failed Check the CP card.”

See the *X11 input/output guide* (553-3001-400) for a description of all maintenance commands, and the *X11 system messages guide* (553-3001-411) for the interpretation of all system messages.

## Local and remote access

A terminal or a modem must remain permanently connected to an SDI port in a network slot to provide a constant I/O interface to the system. Although only one device can communicate with the system at a time, many devices can be installed at local and remote locations.

When a system terminal is installed locally, it is connected directly to a serial data interface (SDI) card, located within a module. When a system terminal is installed at a remote location, modems (or data sets) and a telephone line are required between the terminal and the SDI card.

For a modem connection to the Meridian 1, Bell 103/212 compatible dumb modems are recommended for all systems, except options 51C, 61C, 81, and 81C.

### CAUTION

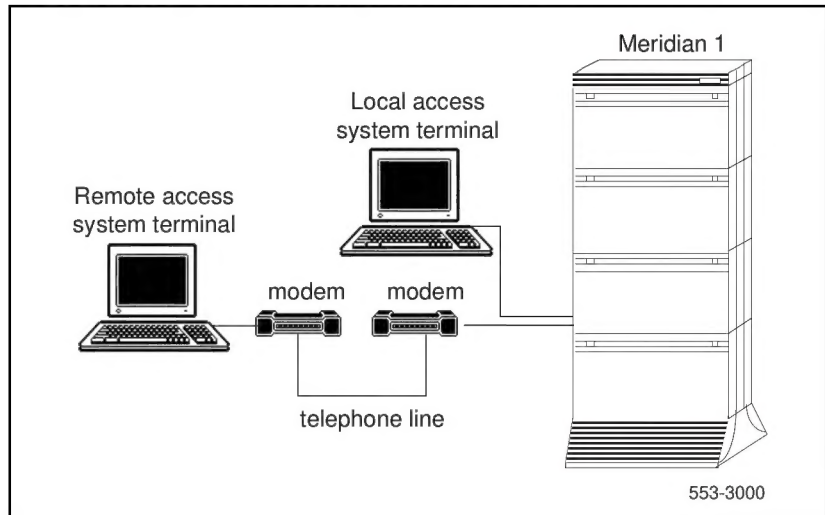
If a Hayes command-set compatible (smart) modem is used at the Meridian 1 end, you *must* select the dumb mode of operation, Command Recognition OFF and Command Echo OFF, before connecting the modem to the SDI port. Refer to the modem instructions to set the mode of operation.

If a printer is connected to an SDI port (locally or remotely), you must disable XON/XOFF flow control so that no characters or signals are sent to the port, to avoid a “ping-pong” effect.

Figure 3 shows typical system terminal configurations. See “Access through the system terminal” in *Meridian 1 fault clearing* (553-3001-510) or *Meridian 1 hardware replacement* (553-3001-520) for the access procedure.

For information specific to option 51C, 61C, 81, and 81C, see “Options 51C, 61C, 81, and 81C terminal and modem guidelines” on page 12.

**Figure 3**  
**Local and remote access to a system terminal**



### **Options 51C, 61C, 81, and 81C terminal and modem guidelines**

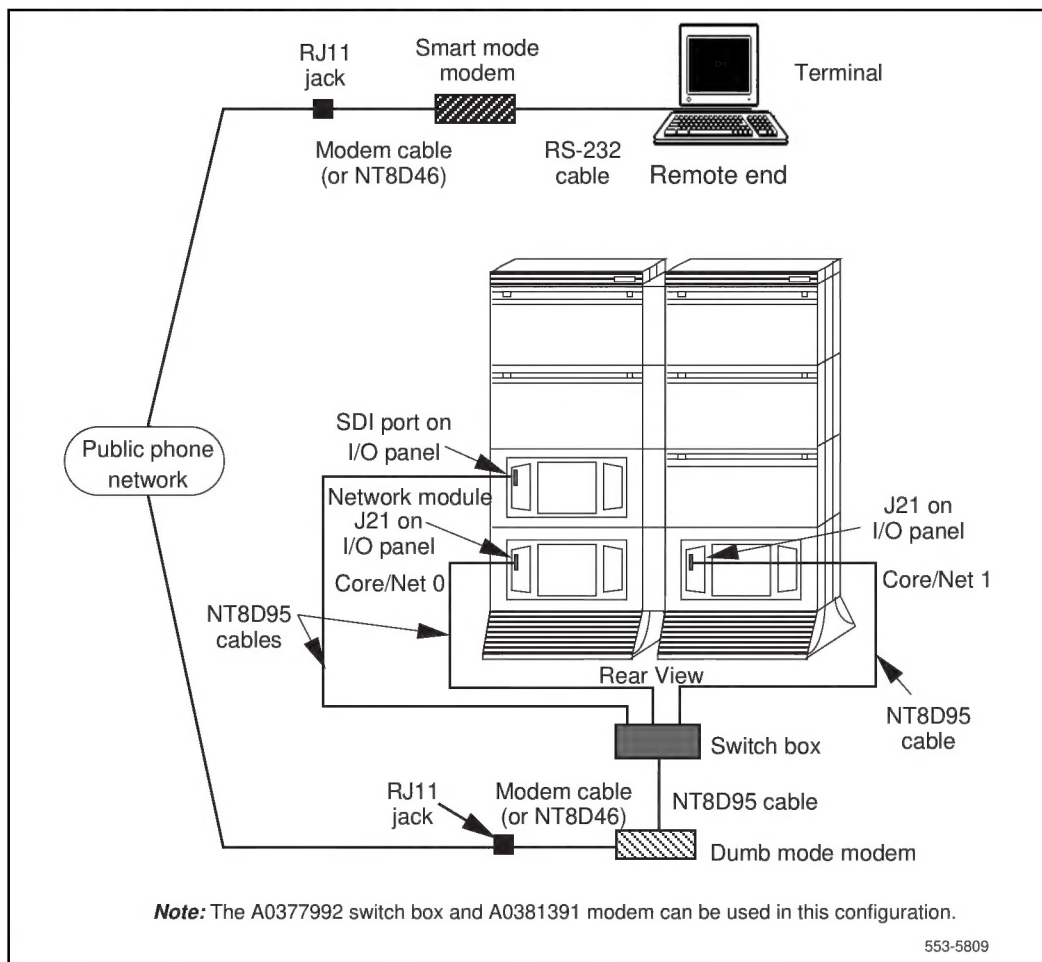
Each NT6D66 Call Processor Card or NT9D19 Call Processor Card provides a data terminal equipment (DTE) port at J21 and a data communication equipment (DCE) port at J25 on the Core and Core/Network Module I/O panel. The designations DTE and DCE refer to the function of the port, not the type of device that connects to the port. Therefore, a modem (which is DCE) connects to the DTE port at J21, and a terminal (which is DTE) connects to the DCE port at J25.

The input/output ports on the CP card (CPSI ports) are used for access to the Core or Core/Network Module, which houses the card. The CPSI ports are active only when the Core associated with the CP card is active. Therefore, the CPSI ports should not be used as the only I/O connection for the system.

**Note:** For correct operation, terminals used with options 51C, 61C, 81, and 81C must be set to 9600 baud, 7 data, space parity, one stop bit, full duplex, XON.

Figure 4 shows the recommended configuration for remote maintenance monitoring on option 81, which also applies to option 51C, 61C, and 81C. In this configuration, a switch box is normally set to the SDI port to remotely monitor general system operation. The CPSI ports can be accessed for debugging and patch downloading (through your Northern Telecom representative).

**Figure 4**  
**Modem to a switch box and SDI and CPSI ports**



See “Options 51C, 61C, 81, and 81C terminal and modem connections” in *Meridian 1 system installation procedures* (553-3001-210) for detailed information on configuring and connecting terminals and modems with options 51C, 61C, 81, and 81C.

**Note:** The A0377992 Black Box ABCDE-Switch, A0381391 UDS FastTalk modem, and cables required for the configuration are available through Northern Telecom.

Modems must meet the following required specifications to be compatible with options 51C, 61C, 81, and 81C. Modems that meet the following recommended specifications must also meet the required specifications.

- *Required:* true, not buffered, 9600 baud support (required for remote Northern Telecom technical support)
- *Required:* CCITT V.32 or V.32bis compliance
- *Recommended:* the ability to adjust to lower and higher speeds, depending on line quality, while maintaining 9600 baud at local DTE
- *Recommended:* V.42 error correction
- *Recommended:* V.42bis data compression

The following models have been tested and verified as compatible with options 51C, 61C, 81, and 81C:

- Hayes V-series ULTRA Smartmodem 9600
- Motorola 28.8 Data/Fax modem
- UDS FastTalk V.32/42b (available through Northern Telecom)
- US Robotics Courier HST Dual Standard V.32bis

A dispatch or call back modem, normally connected to the SDI port, can be used if it meets the requirements listed above. If you want to use a modem of this type that does not meet the requirements, the modem can only be used in addition to a modem that does meet specifications.

## Maintenance telephone

A telephone functions as a maintenance telephone when you define the class of service as maintenance set allowed (MTA) in the Multi-line Telephone Administration program (LD 11). A maintenance telephone allows you to send commands to the system through the following maintenance overlays: LD 30, LD 32, LD 33, LD 34, LD 35, LD 36, LD 37, LD 38, LD 41, LD 42, LD 43, LD 45, LD 46, LD 60, LD 61, and LD 62.

**Note:** The Core Common Equipment Diagnostic (LD 135) and Core I/O Diagnostic (LD 137) are among the overlays that cannot be accessed through a maintenance telephone.

You can test tones and outpulsing through the maintenance telephone. Specific commands for tone testing are given in the Tone and Digit Switch and Digitone Receiver Diagnostic (LD 34).

To enter commands on a maintenance telephone, you press the keys that correspond to the letters and numbers of the command (for example, to enter *LD 42 return*, key in *53#42##*). Table 2 shows the translation from a terminal keyboard to a telephone dial pad.

See “Access through the maintenance telephone” in *Meridian 1 fault clearing* (553-3001-510) or *Meridian 1 hardware replacement* (553-3001-520) for the access procedure.

**Table 2**  
**Translation from keyboard to dial pad**

| Keyboard                                                      |   |   |            | Dial pad |
|---------------------------------------------------------------|---|---|------------|----------|
|                                                               |   |   | 1          | 1        |
| A                                                             | B | C | 2          | 2        |
| D                                                             | E | F | 3          | 3        |
| G                                                             | H | I | 4          | 4        |
| J                                                             | K | L | 5          | 5        |
| M                                                             | N | O | 6          | 6        |
| P                                                             | R | S | 7          | 7        |
| T                                                             | U | V | 8          | 8        |
| W                                                             | X | Y | 9          | 9        |
|                                                               |   |   | 0          | 0        |
|                                                               |   |   | Space or # | #        |
|                                                               |   |   | Return     | ##       |
|                                                               |   |   | *          | *        |
| <b>Note:</b> There is no equivalent for Q or Z on a dial pad. |   |   |            |          |